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IS 7526 (1996): Detonating Fuses [CHD 26: Explosives and Pyrotechnics]

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(दूसरा पुनरीक्षण)

Indian Standard

DETONATING FUSES — SPECIFICATION

(Second Revision)

ICS 71.100.30

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BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

September 1996

Price Group 2

Explosives and Pyrotechnics Sectional Committee, CHD 026

FOREWORD

This Indian Standard (Second Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Explosives and Pyrotechnics Sectional Committee had been approved by the Chemical Division Council.

This standard was originally published in 1974 and was subsequently revised in 1984. The original standard covered only the detonating fuses required for general use. In the first revision of the standard, the requirement for diameter was modified to cover other varieties of detonating fuses. The requirement for sensitivity after water-proofness test was also added in the first revision.

In this revision a new requirment for side brisance test has been incorporated along with the relevent test method. The requirements for visual examination and packing and marking have been suitably modified.

The composition of the committee responsible for the formulation of this standard is given in Annex A.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2:1960 'Rules for rounding off numerical values (*revised*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

DETONATING FUSES — SPECIFICATION

(Second Revision)

1 SCOPE

This standard prescribes requirements and methods of sampling and test for detonating fuse with pentaerythritol nitrate (PETN) core.

2 REFERENCES

The following Indian Standards listed below are necessary adjuncts to this standard:

IS No.	*Title*
1260 (Part 1) : 1973	Pictorial markings for handling and labelling of goods: Part 1 Dangerous goods (*first revision*)
6609 (Part 4) : 1984	Methods of test for commercial blasting explosives and accessories: Part 4 Detonating fuses (*first revision*)
7391 (Part 1) : 1991	Cotton covered copper conductors: Part 1 Round conductors
10081:1981	Glossary of terms relating to commercial blasting explosives, pyrotechnics and blasting practices

3 TERMINOLOGY

For the purpose of this standard, the definitions given in IS 10081:1981 shall apply.

4 REQUIREMENTS

4.1 Physical Examination

The detonating fuse, on physical examination, shall be found to have a smooth surface, free from kinks, surface blemishes, cracks, etc. It shall be pliable when handled. When felt by hand, it shall not show any discontinuity of powder charge.

4.2 Diameter

The nominal diameter of the commonly manufactured detonating fuse of charge mass 6 ± 1 g/m shall be 3.5 to 4.5 mm, and of charge 2 mass 10 ± 1 g/m shall be 4.25 to 5.5 mm when measured as prescribed in **3.2** of IS 6609 (Part 4) : 1984.

NOTE — There are many other varieties of detonating fuses manufactured for specified usage. As the diameter will vary with the amount of explosive core and the material of construction, the nominal diameters of such special detonating fuses shall be as agreed to between the purchaser and the supplier.

4.3 Flexibility

4.3.1 *Low Temperature Flexibility*

When tested as prescribed in **3.3.1** of IS 6609 (Part 4):1984, the surface of the fuse shall not show any crack on the outer covering.

4.3.2 *High Temperature Flexibility*

When tested as prescribed in **3.3.2** of IS 6609 (Part 4):1984, the surface of the fuse shall not show any crack on the outer covering and also there shall not be any stickiness on the surface.

4.4 Waterproofness

The material shall be subjected to water pressure test at 2.1 kg/cm^2 for 24 hours as prescribed in **3.4.1** of IS 6609 (Part 4):1984. It shall pass the requirement of the test if there is no trace of any water absorption.

4.4.1 *Sensitivity After Waterproofness Test*

When tested as prescribed in **3.4.2** of IS 6609 (Part 4):1984, the detonating fuse shall detonate completely and the end portion shall leave a burning mark in the lead plate which is taped to the tail end of the fuse prior to testing.

4.5 Velocity of Detonation

The velocity of detonation when determined by either of the methods prescribed in **3.5** and **3.6** of IS 6609 (Part 4):1984 shall be not less than 6 000 m/s.

4.6 Transmission of Detonation

When tested as prescribed in **3.7** of IS 6609 (Part 4):1984, there shall be no failures to detonate either in the main line or in the branch lines.

4.7 Side Brisance Test

4.7.1 *Outline of the Method*

This test is a measure of the ability of the Detonating Fuse/Cord to initiate another cord when it is kept at a distance apart by its side. The distance/gap that is normally kept varies from 5 mm — 15 mm depending on the coreloads of detonating fuse.

4.7.2 *Apparatus*

4.7.2.1 *Size of the witness plate*

4 cm^2 and 5 mm thick lead plate conforming to IS 7391(Part 1) : 1991.

4.7.2.2 *Size of wooden spacer*

5 cm long 1.5 mm thick, width 5 mm, 10 mm or 15 mm as required.

4.7.3 *Procedure*

Take 2 pieces of 30 cm length of fuse to be tested. Place them apart across specified wooden spacer (5 cm long, 1.5 mm thick) 5 mm, 10 mm or 15 mm wide as required and tie by means of suitable material so as to ensure good contact with spacers be tightly on an assembly bench. The portions of fusetied should parallel. Place the assembled sample on the firing ground. Keep a lead plate as witness plate on the acceptor end of the fuse securely tied.

Initiate the detonating fuse donor end by a No. 6 cap observing usual precautions. Record the data wherein the acceptor detonating fuse has detonated in full or not, by seeing the indentation mark on the witness plate. In case of failure the acceptor fuse will be undetonated and there will be no marks on the leads plate. Normally detonating cord 10 g will pass 10 mm gap.

4.8 Breaking Load

The breaking load of live detonating fuse when determined by the method prescribed in **3.9** of IS 6609 (Part 4):1984 shall be at least 50 kg.

4.8.1 For specific uses, the breaking load shall be as agreed to between the purchaser and the supplier.

5 PACKING AND MARKING

5.1 Packing

The detonating fuse shall be supplied, wound on wooden reels in lengths as agreed to between the purchaser and the supplier. There shall be not more than three joints in each reel and one metre before the joint, a red tape shall also be put as warning.

5.2 Marking

Each package shall be marked with the following information:

a) Indication of the source of manufacture,
b) Number of reels,
c) Number of joints on the reel,
d) Lot number to enable the batch of manufacture to be traced from records,
e) Core charge, and
f) Date of manufacture.

5.2.1 Each package shall be marked with appropriate explosive symbol specified in IS 1260 (Part 1):1973.

5.2.2 The packages may also be marked with the 'Standard Mark'.

5.2.2.1 The use of the Standard Mark is governed by the provisions of *Bureau of Indian Standards Act*, 1986 and the Rules and Regulations made thereunder. The details of conditions under which the licence for the use of Standard Mark may be granted to manufacturers or producers may be obtained from the Bureau of Indian Standards.

5.2.3 The packing and marking shall further conform to the provisions of the *Indian Explosives Rules*, 1983.

6 SAMPLING

6.1 Scale of Sampling

6.1.1 *Lot*

All reels of detonating fuses of the same length and belonging to the same batch of manufacture in a consignment shall be grouped together and each such group shall constitute a lot.

6.1.2 For ascertaining conformity of the material to the requirements of the specification, samples shall be tested separately for each lot. The number of reels to be selected from the lot shall depend on the size of the lot and shall be in accordance with Table 1.

Table 1 Scale Of Sampling and Permissible Number of Defectives

(*Clause* 6.1.2)

Lot Size (1)	Number of Reels to be Selected (2)
Up to 100	5
101 to 150	8
151 to 500	13
501 and above	20

6.2 Number of Tests and Criteria for Conformity

All reels selected under **6.1.2** shall be tested for requirements prescribed in **4.1** to **4.8**. In case of failure, a retesting shall be carried out with twice the number of reels selected, for the characteristics in which the lot has failed. The lot shall be deemed to conform to the requirements of this specification if all the reels in the sample pass the requirements of the standard.

ANNEX A

(*Foreword*)

COMMITTEE COMPOSITION

Explosives and Pyrotechnics Sectional Committee, CHD 026

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Member Secretary
Shri R. P. Singh
Deputy Director (Chem), BIS

(*Continued on page 4*)

(Continued from page 3)

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